

DESCRIPTION OF A NEW SUBSPECIES OF
PRAIRIE VOLE, *MICROTUS OCHROGASTER*

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The individual, age, sexual, and geographical variation in voles of the subgenus *Pedomys* has recently been analyzed as part of a monographic study of that group. Nearly 5,000 specimens from over 950 localities were examined for the following: dorsal and ventral pelage coloration; external measurements; cranial measurements (condylobasilar length, condylopalatal length, length of diastema, alveolar length of maxillary toothrow, palatilar length, length of incisive foramina, zygomatic breadth, lambdoidal breadth, prelamdoidal breadth, interorbital breadth, depth of braincase, and pattern of M3); pelvic girdle parameters (ischial length, pubis length, pubis width, and shape of the descending portion of the ischium); hyoidal parameters (shape and size of the basihyal, hypohyals, ceratohyals, and thyrohyals); and bacular parameters (length of baculum, shape of base, and number, location, and size of lateral segments).

Detailed results of this study will be reported elsewhere. However, analysis of the data, including cluster analysis and principal components analysis, indicates the existence of an undescribed but well-differentiated subspecies of *Microtus ochrogaster* from central and southern Montana, Wyoming, and the contiguous corners of western South Dakota and Nebraska.

Microtus ochrogaster similis, new subspecies

Holotype.—Adult, female, skin and skull, No. 48183, Univ. Illinois Mus. Natur. Hist., from KULR-TV Tower, Billings, Yellowstone Co., Montana; collected June 15, 1973, by C. L. and C. W. Severinghaus and prepared by W. D. Severinghaus, original No. 1410.

Range.—Central and southern Montana, central and northwestern Wyoming, southwestern South Dakota, and northwestern Nebraska.

Definition.—A subspecies of *Microtus ochrogaster* characterized by: light brownish-black, hispid dorsal pelage, light to medium ochraceous ventral pelage; medium size, both externally and cranially; total length from 133.0 to 156.5 mm; hind foot from 19.5 to 20.6 mm; condylopalatal length from 17.3 to 18.1 mm; length of diastema from 7.85 to 8.20 mm; interorbital breadth from 3.78 to 4.03 mm; zygomatic breadth from 11.7 to 11.9 mm; condylobasilar length from 24.8 to 25.6 mm; palatilar length from 12.6 to 13.3 mm; prelamdoidal breadth from 9.03 to 9.21 mm; and depth of braincase from 7.58 to 7.90 mm.

Diagnosis.—*Microtus ochrogaster similis* differs from *M. ochrogaster haydenii*, the only subspecies with which it integrates, in being smaller

Table 1. External and cranial measurements as population minima and maxima of the subgenus *Pedomys*.

	<i>similis</i>	<i>haydenii</i>	<i>minor</i>	<i>ochrogaster</i>	<i>ohionensis</i>	<i>ludovicianus</i>
Total length	133.0	143.7	110.0	132.0	122.8	143.1
Hind foot length	19.5	19.3	15.0	17.5	17.1	18.2
Condylbasilar length	24.8	24.3	19.8	23.5	23.5	24.8
Palatilar length	12.6	12.7	9.8	11.9	11.6	12.4
Condylopalatal length	17.3	17.3	14.0	16.3	16.1	17.4
Length diastema	7.85	7.58	6.25	7.60	7.33	7.91
Maxillary tooththrow	6.11	6.28	4.90	5.60	5.67	6.39
Zygomatic breadth	14.7	14.2	10.8	13.9	13.7	14.4
Interorbital breadth	3.78	3.84	3.20	3.70	3.73	3.83
Lambdoidal breadth	11.7	11.4	9.0	10.6	11.3	11.5
Prelambdoidal breadth	9.03	9.37	7.80	8.72	8.83	9.14
Depth braincase	7.58	7.45	5.95	7.00	7.40	7.44
Incisive foramina	4.32	4.57*	3.40	4.10	4.13	4.70†

* Includes *taylori*.

† Only one population.

(Table 1) in all external and cranial measurements, especially prelam-bdoidal breadth and incisive foramina. *Microtus ochrogaster similis* differs from *Microtus minor* as follows: markedly larger (see Table 1); dorsal pelage a light brownish-black rather than dark brownish-black. *Microtus ochrogaster similis* differs from *M. ochrogaster ochrogaster* as follows: similar size except hind foot larger; hispid dorsal pelage light brownish-black rather than dark brownish-black. *Microtus ochrogaster similis* differs from *M. ochrogaster taylori* in the same way as does *M. ochrogaster haydenii*. *Microtus ochrogaster similis* differs from *M. ochrogaster ohionensis* as follows: markedly larger; dorsal pelage a light brownish-black rather

than dark brownish-black; ventral pelage light to medium ochraceous rather than white to gray. *Microtus ochrogaster similis* differs from *M. ochrogaster ludovicianus* as follows: larger; dorsal pelage a light brownish-black rather than dark brownish-black.

Description.—The holotype, an adult female, and six adult topotypes, four males and two females are, in millimeters, respectively: total length, 142, 151, 129, 135, 141, 152, 148; length of hind foot, 18, 20, 18, 19, 20, 21, 20; length of ear, 12, 13, 12, 14, 13, 14, 14; condylobasilar length, 25.4, 26.6, 23.1, 24.6, 25.6, 27.3, 26.0; length of diastema, 8.1, 8.6, 7.2, 7.7, 8.4, 8.9, 8.3; palatilar length, 12.8, 13.1, 11.4, 12.2, 12.9, 13.5, 12.8; alveolar length of maxillary toothrow, 6.5, 6.7, 5.7, 6.3, 6.6, 6.9, 6.8; zygomatic breadth, 15.0, 15.9, 13.9, 14.6, 15.1, 16.6, 14.9; interorbital breadth, 3.7, 3.95, 3.9, 3.8, 3.5, 3.8; prelamdoidal breadth, 9.1, 9.2, 9.1, 9.15, 9.3, 9.4, 9.3; lamdoidal breadth, 11.6, 12.2, 11.0, 11.6, 12.2, 12.6, 11.7; depth of braincase, 7.6, 7.9, 7.5, 7.4, 8.0, 8.2, 8.0; condylopalatal length, 17.7, 18.4, 16.1, 17.3, 17.8, 19.3, 18.2; length of incisive foramina, 5.2, 5.2, 4.7, 4.2, 4.6, 4.7, 5.1.

Remarks.—*Microtus ochrogaster similis* differs appreciably from *Microtus minor*. *Microtus o. similis* integrades with *M. o. haydenii* in Custer and Fall River counties, South Dakota, Sioux County, Nebraska, eastern Montana, and southern and eastern Wyoming. No such zone of intergradation, or sympatry, exists between *M. o. similis* and *Microtus minor* as approximately 150 miles separate these two taxa.

Microtus ochrogaster is a variable species but most of this can be accounted for by the recognition of subspecies. The external and cranial characters, excluding color, of *Microtus ochrogaster similis* resemble and are most similar to *M. o. ochrogaster*, not the contiguous *M. o. haydenii*. This is especially well shown by such parameters as condylobasilar length, zygomatic breadth, palatilar length, length of diastema, length of alveolus of the maxillary toothrow, and prelamdoidal breadth (Table 1). All of these are well within the range of variation of *M. o. ochrogaster* and only approach the range of variation of *M. o. haydenii*. There is perhaps a slight clinal trend within *M. ochrogaster* from the small *M. o. ohionensis* in the east, through *M. o. ochrogaster*, to the large *M. o. haydenii* in the west. It is somewhat surprising to find populations of the small sized *M. o. similis* in the western part of the range of *M. ochrogaster*.

A principal components program, written by R. B. Selander, was used to analyze 154 pooled localities representing 1676 adult specimens. The first two principal components accounted for 93.46 per cent of the variation and the range in principal components scores for each taxon was determined (Table 2). The range of scores for *M. o. similis* falls within the range of *M. o. ochrogaster* for the first and second principal components and only a small overlap with *M. o. haydenii* for the second principal component.

Table 2. Principal component scores of the subgenus *Pedomys*.

	PC#1	PC#2
<i>similis</i>	0.5606–0.6152	0.3011–0.3156
<i>haydenii</i>	0.6183–0.7501	0.3121–0.3410*
<i>minor</i>	0.0330–0.2877	0.2505–0.2841
<i>ochrogaster</i>	0.4459–0.6496	0.2973–0.3145
<i>ohionensis</i>	0.4430–0.5327	0.3214–0.3530
<i>ludovicianus</i>	0.5647	0.2969†

* Includes *taylori*.

† Only one population.

A cluster analysis program written by F. J. Rohlf and modified by R. B. Selander was utilized to analyze 158 pooled localities (Fig. 1). The dendrogram produced by this program indicated that *M. o. similis* clusters with *M. o. ochrogaster* and *M. o. ludovicianus* as eight of 11 O.T.U.'s representing *similis* clustered with *ochrogaster* while the remaining three clustered with *haydenii*.

The type specimen for this subspecies was collected by C. L. and C. W. Severinghaus in an old field at the base of a television tower south of the Yellowstone River at Billings, Yellowstone Co., Montana on June 15, 1973. The field had short grass and weeds with no noticeable runways. Three specimens, two females and one male, were taken on June 15 and five additional specimens, four males and one female on June 16.

The subspecific epithet for *M. o. similis* reflects its similarity with *M. o. ochrogaster*.

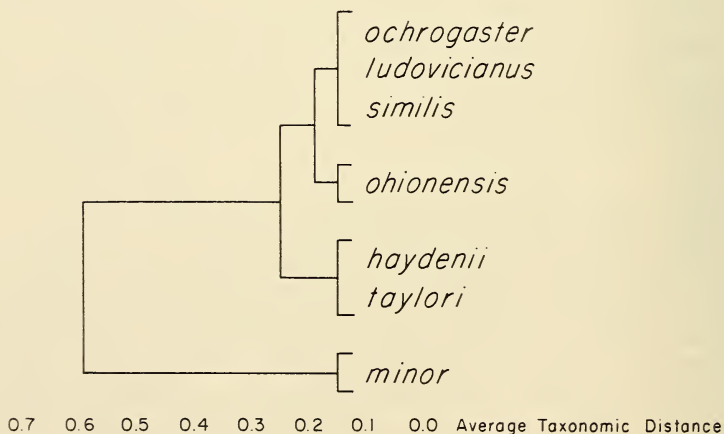


Fig. 1. Dendrogram of the subgenus *Pedomys*. Note close relationship of *similis* to *ochrogaster* as compared to *haydenii* and *minor*.

Specimens Examined

The following abbreviations have been used: University of Illinois Museum of Natural History (UIMNH), U.S. National Museum of Natural History (USNM), University of Michigan Museum of Zoology (UMMZ), University of Kansas (KU), Michigan State University (MSU), and Indiana State University (ISU). All collections listed are *M. o. similis*.

MONTANA. Phillips Co.: 4 mi N James Kipp State Park, 3 (UIMNH). Garfield Co.: Piney Buttes, 10 (USNM); Jordan, 1 (UMMZ). Prairie Co.: 3 mi S Terry, 20 (USNM). Wheatland Co.: 4 mi SE Shawmut, 3 (UMMZ). Musselshell Co.: 16 mi S Roundup, 2 (USNM). Rosebud Co.: Ingomar, 3 (USNM); 28 mi NE Porcupine Creek, Hole in the Rock, 1 (USNM); Lame Deer, 2 (USNM). Custer Co.: Tongue River, 3 mi S Miles City, 17 (USNM); Fort Custer [= Fort Keogh], 18 (USNM). Sweet Grass Co.: 13 mi ENE Melville, 2 (UMMZ); 11 mi ENE Melville, 8 (UMMZ). Stillwater Co.: Columbus, 6 (USNM); 10 mi NW Park City, 1 (USNM). Carbon Co.: 3 mi E Bear Creek, 4 (UMMZ). Yellowstone Co.: Lake Basin, 2 (USNM); Billings, 9 (ISU), 1 (USNM); KULR-TV Tower, Billings, 8 (UIMNH); Indian Creek, 8 mi SE Huntley, 4 (USNM). Big Horn Co.: 14 mi S Custer, 1 (KU); 15 mi S Custer, 7 (KU); Toluca, 6 (USNM); Crow Agency, 125 (USNM); Busby, 1 (KU); 20 mi N Wyoming, Little Bighorn River, 2 (USNM); 2 mi N Wyoming, Little Bighorn River, 1 (USNM); Valley of Little Bighorn River, 4 (USNM); Little Bighorn River, 1 (USNM). Powder River Co.: Powderville, 3 (KU), 3 (MSU); Powder River, Powderville, 7 (USNM); Moorhead, 12 (USNM); Powder River, Moorhead, 5 (USNM). No County: Crazy Mts., 2 (USNM).

SOUTH DAKOTA. Custer Co.: 7 mi E faith, 1 (UIMNH). Fall River Co.: 9 mi S, 3 mi W Oelrichs, 2 (KU).

WYOMING. Park Co.: 4 mi N Garland, 2 (KU). Big Horn Co.: Greybull; 9 (USNM); 8/10 mi S Greybull, 2 (KU); 1 mi S Greybull, 1 (KU). Washakie Co.: 3 mi E, 1 mi N Ten Sleep, 1 (KU). Sheridan Co.: Dayton, 1 (USNM); 3 mi WNW Monarch, 3 (KU); 4 mi NNE Banner, 4 (KU); 5 mi NE Clearmont, 12 (KU). Johnson Co.: 1 mi W, 8/10 mi S Buffalo, 5 (KU); 15½ mi W, 1 mi S Buffalo, 1 (KU); 4½ mi W, 1 mi S Buffalo, 1 (KU); 6½ mi W, 2 mi S Buffalo, 3 (KU); ½ mi E Klendike [= Klondike], 1 (KU); 1 mi WSW Kaycee, 5 (KU). Campbell Co.: Ivy Creek, 8 mi W, 5 mi N Spotted Horse, 4 (KU). Crook Co.: 1½ mi NW Sundance, 1 (KU); 15 mi ENE Sundance, 1 (KU); Sundance, 2 (USNM). Weston Co.: 1 mi N Black Hills, 1 (UMMZ); Newcastle, 1 (USNM); 23 mi SW Newcastle, 2 (KU). Fremont Co.: 12 mi N, 3 mi W Shoshoni, 11 (KU); 1½ mi W, 2¼ mi S Casper, 3 (KU); 6 mi S, 2 mi W Casper, 1 (KU); 2 mi W, 7 mi S Casper, 1 (KU); Alcova, 1 (KU); Sun, 1 (USNM). Converse Co.: 4 mi W, 6 mi N Bill, 1 (KU); Beaver, 1 (USNM); 3 mi N, 5 mi E Orin, 9 (KU);

Sand Creek, 1 (USNM). Niobrara Co.: 10 mi N Hat Creek, 9 (KU); 1 mi W Lusk, 17 (KU); 2 mi S, ½ mi E Lusk, 2 (KU). Carbon Co.: Pass, 4 (USNM).

NEBRASKA. Sioux Co.: 8 mi N Harrison, Warbonnet Twp., 4 (UMMZ); Agate, 3 (KU), 1 (UMMZ).

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